

IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (Currently Amended) A magnetoresistive device having:

an intermediate layer;

a first fixed magnetization layer located directly below and in contact with said intermediate layer, said first fixed magnetization layer is a crystalline ferromagnetic material that is made of an alloy of at least one of the following: iron, nickel and cobalt;

a second fixed magnetization layer located below said intermediate layer;

a non-magnetic conductive layer in-between the first and second fixed magnetization layers;

a free magnetization layer located adjacently above said intermediate layer, said free magnetization layer is an amorphous ferromagnetic material that is made of an alloy of at least one iron group element and at least one element selected from the group consisting of metalloid elements, rare earth elements and valve metals; and

an antiferromagnetic layer coupled to said second fixed magnetization layer, said antiferromagnetic layer effective to prevent the magnetization of said fixed magnetization layer from being inverted, and

wherein,

said first fixed magnetization layer and said free magnetization layer are a pair of ferromagnetic layers opposed to each other to obtain variations in magnetoresistance by an electric current flowing in a direction perpendicular to the film plane.

2. (Original) A magnetoresistive device according to claim 1, characterized in that said magnetoresistive device has a laminated ferri structure.

3. (Original) A magnetoresistive device according to claim 1, characterized in that said magnetoresistive device is a tunnel magnetoresistive device using a tunnel barrier layer made of an insulating material or a semiconducting material as said intermediate layer.

4. (Currently Amended) A magnetic memory apparatus comprising:

a word line;

a bit line; and

a magnetoresistive device sandwiched by said word line and said bit line, said

magnetoresistive device having (1) a first fixed magnetization layer located directly below and in contact with an intermediate layer, said first fixed magnetization layer is a crystalline ferromagnetic material that is made of an alloy of at least one of the following: iron, nickel and cobalt, a second fixed magnetization layer located below said first fixed magnetization layer; and a non-magnetic conductive layer in-between the first and second fixed magnetization layers.

(2) a free magnetization layer located adjacently above said intermediate layer, said free magnetization layer is an amorphous ferromagnetic material that is made of an alloy of at least one iron group element and at least one element selected from the group consisting of metalloid elements, rare earth elements and valve metals and (3) an antiferromagnetic layer coupled to said second fixed magnetization layer, said antiferromagnetic layer effective to prevent the magnetization of said fixed magnetization layer from being inverted,

wherein,

said first fixed magnetization layer and said free magnetization layer are a pair of ferromagnetic layers opposed to each other to obtain variations in magnetoresistance by an electric current flowing in a direction perpendicular to the film plane.

5. (Original) A magnetic memory apparatus according to claim 4, characterized in that said magnetoresistive device has a laminated ferri structure.

6. (Original) A magnetic memory apparatus according to claim 4, characterized in that said magnetoresistive device is a tunnel magnetoresistive device using a tunnel barrier layer made of an insulating material or a semiconducting material as said intermediate layer.